Testimony

On

The Need for a Michigan Ergonomics Standard and Opposition to HB 5447

By

Franklin E. Mirer, Ph.D.

Director

UAW Health and Safety Department

Before the

Commerce Committee

Michigan House of Representatives

Lansing, Michigan

January 17, 2006

This testimony is on behalf of the International Union, United Automobile, Aerospace and Agricultural Implement Workers of America, UAW, and its active and retired members in Michigan. Equally importantly, this testimony is on behalf of millions of Michigan workers exposed to ergonomic hazards who are not represented by a labor union.

The UAW urges members of this committee to vote against HB 5447. HB 5447 would deny Michigan employers, employees and safety professionals the opportunity to craft efficient and effective mandatory ergonomics protections for Michigan workers. It would deny Michigan a competitive edge in manufacturing and services.

The benefits of ergonomics programs for workers, the scientific basis for ergonomics programs, and the state of the art generally are discussed in the extensive material at the end of this testimony. The initial portion directly addresses stated business concerns fueling HB 5447.

The Michigan OSHA program is now following the legislatively mandated process to attempt to set a standard for ergonomics protections. The Safety Standards Commission and Health Standards Commission, themselves representatives of employees, employers and the public, have appointed a standards advisory committee of similar composition to craft a standard. That Advisory Committee has worked hard to reach consensus, and we hope will present a proposal to the standards commissions. Those commissions may then vote to send the proposal to public hearing, following which they may vote for the standard. The standard then comes to the Joint Committee on Administrative Rules for approval. Voting for HB 5447

means trashing a gift wrapped present without even opening the box to see what's inside. Voting for HB 5447 means turning our backs on a process defined and operating for over three decades.

With all due respect, HB 5447 doesn't represent the state of economic or ergonomic life in 2006.

Michigan leads the world in ergonomics expertise. The University of Michigan Center for Ergonomics is a world leader in research and professional training in ergonomics. Michigan manufacturers, not just the auto companies, employ expert staff in ergonomics, and operate continuously improving programs. The UAW and other unions are expert as well. A large and growing cadre of peer experts on ergonomics populates the manufacturing floor in Michigan facilities. The Michigan office furniture industry manufactures the leading products, symbolized by the Herman Miller Aeron chair, which yielded 1,810,000 hits on Google.

Industry leaders recognize that ergonomics programs are essential for quality and efficiency as well as for protecting workers. Ergonomics makes high production rates feasible. But we need the push of a mandatory standard as well as the pull of economic logic to make this work. An industry leader doesn't necessarily control its suppliers, especially the second and third tier parts which can disable a vehicle just as surely as a design defect.

Health care costs include the enormous costs of ergonomic injuries in patient care and medical errors arising from workers in pain. Lift assist devices would alleviate the extremely high rate of injuries in nursing homes; the up-front investment cost is offset by fewer back injuries among workers and fewer patient drops among our parents, and possibly ourselves. Shipping and warehousing costs are increased by the high rate of overuse and repetitive motion injuries in these sectors, which add to the cost of every other sector.

Supporters of HB 5447 claim concerns for small employers and costs. The UAW is also concerned for the economic health of small employers as well as the employees of small employers. The UAW knows a lot about small employers and small worksites. We represent workers in over 800 units in Michigan; 63% of these employ less than 100 members. Another 30% are in the 100-500 employee range. In addition, many of the worksites for State of Michigan employees represented by our Local Union 6000 are small. Our units include warehouses, schools, cafeteria workers, health care and social service agencies. This demonstrates the depth and range of the UAW's experience with ergonomics programs in both manufacturing and non-manufacturing sectors.

The initial investment in ergonomics is not money, instead it's thought: management and employees considering ways to do tasks with less physical stress. This thought and analysis typically eliminates wasted motion and effort. Ergonomic solutions in most smaller worksites are items purchased from catalogues. Ergonomically correct hand tools are usually better from a quality perspective than alternatives like impact wrenches. None of this is beyond the reach of small employers. A standard would lead employers to replace old, dangerous equipment with new, better equipment. A standard might advance investments in time.

The bottom line here is let the Michigan process work for Michigan workers, employers and the general public. Don't reject a standard which hasn't yet seen the light of day. Don't let a

political agenda and ideas fixed in the last century dominate the next century's health and safety.

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>

Following are detailed comments on the technical basis and history of an ergonomics standard.

The UAW's extensive experience with ergonomics programs holds answers to the questions: Is a MiOSHA ergonomics standard needed? Is there sound science to support an ergonomics standard? Is an ergonomics standard consistent with industry practice? Is an ergonomics standard feasible? Is an ergonomics standard applicable and feasible in all sectors of the economy? The answer to each of these questions is a resounding "yes." The actions such a standard would require are not only feasible; they are already commonplace in hundreds of UAW-represented workplaces.

The UAW strongly supports MiOSHA's efforts to set an ergonomics program standard as a modest, but critical, first step toward abating the largest single cause of injury and disability among Michigan workers generally, and UAW members in particular.

The purpose of governmental safety and health standards is to codify the practices of industry leaders so that industry followers can adopt those practices while exposing industry laggards and outlaws for what they are. There are literally thousands of consensus safety standards, set by industry to regulate itself. The large majority of MiOSHA standards are actually outdated, 1970's vintage consensus standards. MiOSHA standards, adopted through an open, evidence-rich process, may stretch the industry leaders, but they are particularly hated by the laggards because management has to comply, rather than merely being invited to comply.

The UAW testimony today will emphasize the following key points:

Each of these points is discussed in detail below:

1. **Ergonomics programs are the only means to prevent the majority of injuries suffered by Michigan workers in the automobile industry, and the manufacturing sector generally. Approximately 60% of injuries in the auto sector are muskuloskeletal disorders.**

The need for ergonomics abatement is most clearly shown in the Bureau of Labor Statistics (BLS) Disabling Injury reports. These studies compile employer-supplied data on the types and causes of injuries and illnesses that result in days away from work. The employer data are a sample of OSHA 101 forms for cases with days away from work.

The MiOSHA safety and health standards commissions relied on this same database when they voted to empanel the Ergonomics Standards Advisory Committee. The UAW believes that that these employer-supplied data probably under-report musculoskeletal disorders. However, the data portray the full extent of the problem.

In the motor vehicle parts sector (SIC 3714), the employment category of in the auto industry with processes most common to other manufacturing industry and with the most small establishments, 54% of disabling conditions are identified by management as strain or sprain injuries and various cumulative trauma diagnoses which are properly grouped as MSD's. In addition, about 20% of disabling injuries were in the "other" category, which includes some MSD's. Therefore, the large majority of disabling conditions are MSD's. For auto parts, 40% of injuries were coded as arising from repetitive motion or overexertion, with an additional 11% in the "other" category. Back injuries are the largest single diagnosis in this sector, 22%, and shoulder injuries are 7%. Back and shoulder injuries are almost entirely of ergonomic origin. In short, injuries preventable by ergonomics programs dominate the disabling injuries in the motor vehicle parts sector, and manufacturing in general.

These data demonstrate that the biggest problems now faced by safety specialists and suffered by workers are hazards that can be abated only by ergonomics programs.

2. Practical ergonomics programs are in place in hundreds of worksites and have set the stage for major progress.

Every UAW-represented location in the Big 3 auto companies has a labor-management ergonomics committee in addition to a labor-management health and safety committee. Labor and management representatives on these committees are trained to analyze injury and illness data to identify high injury jobs; to conduct risk factor analyses; and to identify solutions to reduce ergonomic stresses. Dozens, if not hundreds, of smaller UAW-represented parts suppliers have adopted this model as well. UAW members in the service, clerical and public sectors have been able to implement similar programs. These programs are described in more detail below.

The common ergonomic abatement process used by these committees is shown in the accompanying flowchart. Ergonomics is a continuous improvement process with no clear endpoint. In fact, participants believe that ergonomics improvement is integral to a high performance manufacturing system, just as quality improvement is.

Initially, these UAW ergonomic programs grew from massive penalty OSHA citations for failure to record injuries and illnesses, and from citations under the General Duty Clause. The programs were later codified in labor contracts. Labor and management representatives argue about the best way to do things and whether change is fast enough, but the need for an ergonomics process on this model is no longer in dispute. Our ergonomics programs have been shown to reduce worker injuries and to increase productivity.

Ergonomics program activity goes well beyond the vehicle assembly, stamping, parts

manufacturing and parts distribution facilities of the Big 3 auto makers. Similar but less elaborate programs following the same model, including job analysis methods and labor management structure, have been implemented in many smaller UAW represented workplaces. Ergonomics committees at these facilities are often trained by UAW professionals. We have done this in parts plants, bicycle plants, a health maintenance organization, in clerical settings and among public employees.

3. The Bureau of Labor Statistics surveys show the effectiveness of UAW-negotiated ergonomics programs.

Analysis by the UAW of the most recent government statistics shows that safety and ergonomics programs prevented over 69,000 occupational injuries and illnesses in 1998 in the vehicle assembly and parts sectors. Of these, at least 41,000 were musculoskeletal problems prevented by ergonomics programs.

These data are derived from the Bureau of Labor Statistics' annual injury and illness surveys. Reductions in injury rates reported for key UAW workplaces give strong evidence for the effectiveness of UAW safety and health programs generally, and especially for the value of our ergonomics programs.

The UAW believes that the motor vehicle assembly (SIC 3711), motor vehicle parts (SIC 3714) and automotive stamping (SIC 3465) sectors have gone farther than most others in implementing ergonomics programs. My testimony concentrates on the auto parts sector. We selected 1994 as the baseline, because that is when ergonomics programs were first likely to be fully implemented, then compared these rates to 2004 data, the last year available. For the auto parts sector, the total case rate dropped to 7.9 per 100 employees from 20.3, while the occupational illness rate fell to 1.4 per 100 from 5.0. Specific data on cumulative trauma disorders are no longer collected, but CTD's are about 80% of illnesses recorded.

Over this same period the rates fell slightly for all private employment, but reductions in the auto sector were much greater.

These data show that ergonomics programs decrease the number of worker injuries, with attendant savings to employers as well.

4. Methods for measuring and relieving ergonomic stresses and procedures for carrying out practical ergonomics programs have been developed and verified over the last decade. The science is well established.

The important technical developments for effective ergonomics programs emerged two decades ago, and the broad outline is now largely in place. The driving force was combining the engineering and biomechanics disciplines with medical science and epidemiology. The University of Michigan and NIOSH are the key institutions that have established the United States at the forefront of the science of ergonomics. The technical developments include:

- Development of consistent methods to measure the physical stresses on the human body. Stress is determined by the force exerted on a body part, the frequency of the motion, and the posture of the joint. The Force-Frequency-Posture paradigm is common

to both expert and checklist approaches to ergonomic analysis;

- Acceptance of expert ergonomic analysis for measurement of risk factors according to these methods;
- Development of simplified non-expert approaches to measurement of risk factors (checklists);
- Formulation of the NIOSH lifting guide and related biomechanical models which take into account the weight of an object, distance from the body, and motion of the body in lifting;
- Validated semi-quantitative risk factor checklists for hand, arm and shoulder (upper extremity) cumulative trauma disorders;
- Diagnostic criteria for upper extremity CTD's;
- Standardized physical examination protocols for upper extremity CTD's;
- Validation of symptom surveys and discomfort surveys (psychophysical measures) as risk factor identification tools;
- Validation of risk factor checklist and symptom survey by workforce personnel to identify high risk jobs and propose abatement methods;
- Acceptance of the plant ergonomics committee model, especially lay analysis of risk factors using standardized checklists.

These scientific developments rest on an enormous body of published work as well as practical experience. In 1997, NIOSH published a massive compilation of ergonomics studies. The UAW believes that the NIOSH compilation and analysis of virtually all available studies of work-related musculoskeletal disorders settles the question whether there is sufficient science underlying ergonomics. The studies show exposure-response relationships for ergonomic stress factors and musculoskeletal disorders of each body part. NIOSH did an excellent evaluation of hundreds of reports to show the weight and strength of the evidence for cause and effect relationships, and conclusively confirmed that increased stress causes increased injury.

Nonetheless, Congress subsequently funded two reviews of this issue by the National Academy of Sciences. The NAS issued a report on the study in 1999. The summary conclusion was: "Scientific research clearly demonstrates that effective work place interventions are available which can reduce ergonomic hazards and prevent musculoskeletal disorders. There is evidence that interventions are cost-beneficial for employers."

This section has summarized the state of knowledge when the ergonomics standard was

proposed and the hearings began. Below we discuss subsequent scientific developments that further support the need for an ergonomics standard.

5. The principal need over the next decade is accelerating abatement of exposure to physical stresses.

Many case histories show improved health outcomes on jobs where risk factors had been reduced. Many facilities report reduced injury rates after implementing ergonomics programs. Scientific studies show reduced injury rates and symptom complaints after job changes. These case studies were reported in the NIOSH conference and are regularly presented at professional meetings. The data presented above show sector-wide reductions in MSD rates in the sector with the most advanced ergonomics activities. These successes are reasons for government to keep pressure on employers to abate ergonomic hazards.

The principal problem plant ergonomics committees report is not being able to get high-risk jobs fixed in a timely fashion. High-risk jobs are jobs where injuries have already been recorded. Solutions are usually identified directly from the risk factor analysis: the job task must be changed to reduce the force, limit the number of repetitions of the same motion, or allow the worker to do the job in a neutral posture.

Routine solutions include raising loads off the floor with lift tables, adjusting the height of work, reducing the reach to get or place parts, damping vibration, placing the tool or the work in a fixture, reducing or counterbalancing tool weight. Many tricks of the trade are known to engineers and workers alike. People from the workplace know job changes that will allow the work to be done and reduce the stresses. Virtually all these solutions improve quality and efficiency and therefore increase productivity.

Nevertheless, to solve ergonomics problems and to reduce injury rates in the long term, an employer has to invest time and money up front. Unless pressure for job improvement is maintained, employers will resist accepting their responsibility.

The principal improvement in ergonomics programs achieved in the 1999 round of auto contract negotiations was adoption of specific time limits for the job improvement cycle. In all three auto agreements, management committed that a job will be analyzed within two months of the report of a work-related musculoskeletal disorder and modified to abate identified risk factors within six months of completion of the analysis. In addition, design criteria for new equipment are incorporated into the joint new equipment safety reviews. Some of these criteria are available to suppliers over the internet.

6. The UAW has developed and implemented an ergonomics model for small manufacturing suppliers and office and professional facilities that demonstrates that ergonomics is necessary and feasible in such facilities. These programs also establish industry recognition of MSD risk factors and the elements of a program needed to protect employees.

The UAW has implemented ergonomic interventions at approximately 45 smaller UAW-represented worksites over the past five years.

The essential element of the intervention is training a worksite ergonomics committee to analyze jobs and suggest interventions. In UAW-represented facilities, this training is primarily

conducted by peer trainers, called Local Union Discussion Leaders (LUDL's). LUDL's are full-time employees at UAW-represented facilities. They are shop floor employees who move into a trainer position because of their interest and demonstrated training skills. These persons are released from work on union leave at UAW request to conduct training- related activities. LUDLs assigned to ergonomics training are usually ergonomics committee members at their home facility. They have all taken at least a 40-hour course, conducted job analyses, received training technique instruction and been fully evaluated by UAW Staff and University of Michigan training evaluation staff.

Our experience with this training method indicates that because it is based on hands-on activities, it ensures retention of information. The small group discussion and problem-solving allows for direct learning from peers with experience in the topic. The training includes extensive case studies through the use of videos. In addition, it is delivered at the site. It includes a component where participants evaluate real jobs on the shop floor, in real time.

The UAW has implemented successful ergonomics programs using this training at numerous small businesses, including Jaquith Industries (Local Union 1128) in Syracuse, New York. With the completion of a recent 40-hour Practical Ergonomics Training (PET) program, Jaquith workers are now able to evaluate problem jobs and develop solutions. Some jobs in this shop are presently being re-engineered to eliminate job hazards. In a recent letter to the UAW Health and Safety Department from Jaquith's owners, they praised and credited UAW's Health & Safety Department grant staff for a professional job in helping them to assess their ergonomics concerns and offering solutions to the problems they faced.

- Other small employers who have worked with the UAW to establish successful ergonomics programs include: Recycle Ann Arbor (Local Union 157) in Ann Arbor, Michigan; Bosch Braking Systems (Local Union 2155) in Johnson City, Tennessee; United Defense Systems (Local Union 683) in Minneapolis, Minnesota; Sidler Corporation (Local Union 417) in Madison Heights, Michigan; and AP Parts (Local Union 12) in Toledo, Ohio.

7. Both the second National Academy of Sciences 2001 review and the new ACGIH standard for Hand Activity Level limit demonstrate a continuing scientific consensus in support of ergonomics interventions.

On January 18, 2001, the National Academy of Sciences (NAS) and Institute of Medicine (IOM) released their long-awaited report on Musculoskeletal Disorders and the Workplace ("NAS II"). The report, requested by Congress, confirms yet again that there is strong scientific evidence that exposure to ergonomic hazards in the workplace causes musculoskeletal disorders and that these injuries can be prevented by ergonomic interventions.

The study was not an ivory tower effort. The study committee traveled to Detroit, heard a presentation on the state of the art in the auto industry, toured auto plants accompanied by UAW and Ford staff[1], and heard from local ergonomics committee members, labor and management, who do the work every day[2].

The NAS II report confirms that the exposures addressed by the OSHA standard – heavy

lifting, awkward postures, repetition, force and vibration – cause back injuries and/or upper extremity injuries like carpal tunnel syndrome. It also found that a programmatic approach tailored to individual workplaces, such as that set forth in the OSHA standard, is the most effective means to reduce MSDs. Specific major findings of the study include the following:

> "There is no doubt that musculoskeletal disorders of the low back and upper extremities are an important and costly national health problem...In 1999, nearly 1 million people took time away from work to treat and recover from work-related musculoskeletal pain or impairment of function in the low back or upper extremities. Conservative estimates of the economic burden imposed, as measured by compensation costs, lost wages, and lost productivity, are between $45 and $54 billion annually." (Page ES-1)

> "The panel's review of the research literature in epidemiology, biomechanics, tissue mechanobiology, and workplace intervention strategies has identified a rich and consistent pattern of evidence that support a relationship between the workplace and the occurrence of MSDs of the low back and upper extremities." (Page ES-3)

> "The panel concludes that there is a clear relationship between back disorders and physical load; that is, manual material handling, load movement, frequent bending and twisting, heavy physical work, and whole-body vibration. For disorders of the upper extremities, repetition, force and vibration are particularly important work-related factors." (Conclusion 3, Page 11-10)

> "The weight of the evidence justifies the introduction of appropriate and selected interventions to reduce the risk of musculoskeletal disorders of the low back and upper extremities." (Page 11-2)

> "To be effective, intervention programs should include employee involvement, employer commitment and the development of integrated programs that address equipment design work procedures and organizational characteristics." (Conclusion 8, Page ES-6 and 11-2)

Opponents of an ergonomics regulation promptly issued press releases stating that this report discredited the scientific basis for the OSHA standard. We ask the members of this Subcommittee to judge for yourselves.

Equally compelling was action by the American Conference of Governmental Industrial Hygienists (ACGIH) on December 10, 2000. The ACGIH is the dominant private entity that issues occupational health standards. ACGIH standards are internationally recognized and given deference by many governmental authorities outside of the United States.

The ACGIH preface states:

> "ACGIH recognizes work related musculoskeletal disorders (MSDs) as an important occupational health problem that can be managed using an ergonomics health and safety program...Some of these disorders fit established diagnostic criteria such as carpal tunnel syndrome or tendinitis. Other musculoskeletal disorders may be manifested by nonspecific pain. Some transient discomfort is a normal consequence of work and is unavoidable, but discomfort that persists from day to

day or interferes with activities of work or daily living should not be considered an acceptable outcome of work."

The ACGIH adopted a Threshold Limit Value (TLV) for hand activity level and issued a notice of intended change to adopt a TLV for lifting.

Hand Activity Level is a numerical function of peak hand force, frequency and duration of exposure. The TLV includes an action level, below the exposure limit. The standard notes that:

"Professional judgment should be used to reduce exposures below the action limits recommended in the HAL TLV's if one or more of the following factors are present:

- Sustained non-neutral postures such as wrist flexion, wrist extension, wrist deviation, or forearm rotation;
- Contact stresses;
- Low temperatures; or
- Vibration.

Employ appropriate control measures anytime the TLV's are exceeded or an elevated incidence of work-related musculoskeletal disorders is detected."

8. In conclusion, an ergonomics standard is necessary, feasible and appropriate.

The underlying premise of any MiOSHA standard is that an employer who knows a job has injured an employee must take feasible steps to make the job safer. Few would disagree with the propriety of this premise. This applies equally to ergonomics. The UAW, our auto industry employers, and many smaller employers have demonstrated that ergonomics programs are a "win-win" for both management and employees. In many of our worksites, ergonomic risk assessment techniques are applied predominantly by hourly workers who, in turn, have been trained by other rank-and-file workers. These methods both measure hazard and validate abatement.

Ergonomics programs works. It is time to get down to the business of applying ergonomics.

FEM/mr-opeiu494-1/13/06

f:\dept\h&s\home\fmirer\docs\doc\michigan house ergonomics testimony 2006 rev.doc

[1] Dr. Bradley Joseph and Dr. Gordon Reeve, Ford Motor Company, and Dr. Franklin E. Mirer, UAW Health and Safety Department.

[2] Ford Livonia Transmission Plant and UAW Local 182, and Ford Michigan Truck Plant and UAW Local Union 900.